Jewelry Design and Repair

PROGRAM OUTLINE

PROGRAM GOAL AND OUTCOMES

Program Goal

Penn Foster's Jewelry Design and Repair Program instructs the student in the skills necessary to create, repair, and modify jewelry, including stone setting, sizing, and polishing, in order to work for an established jeweler or start a business of their own.

Program Outcomes	Lessons	Evidence of Learning
Identify the tools and supplies needed to establish a jeweler's bench and perform successful repairs	The Bench Jeweler's Tools	Multiple-choice lesson exams
Identify the properties of precious metals, how to weigh the amount of precious metal in an alloy, and how to calculate value	History of Jewelry and a Summary of Metals	Multiple-choice lesson exams
Design a pattern following appropriate design elements, and from raw materials create clean, well-formed and finished monogrammed jewelry including a bail	Project 1: Creating a Monogram Pendant	Multiple-choice lesson exams
	Graded Project 1: Monogram Earrings	Graded project
	Jewelry Design	Multiple-choice lesson exams
Solder jewelry parts by choosing the correct torch, fuel, solder, flux, and flame for a particular job, and utilizing the proper soldering methods	Soldering	Multiple-choice lesson exams
	Graded Project 3: Three-Stone Prong-Set Band	Graded project
Enlarge or shrink rings by using a mandrel, adding an insert, or removing a piece of the ring to preserve the ring's design and roundness	Ring Sizing	Multiple-choice lesson exams
	Graded Project 4: Wedding Band Resizing	Graded project
Comprehend how to cut and bend individual links and jump rings from raw materials	Project 2: Link Identification Bracelet	Multiple-choice lesson exams
Comprehend how to make a wax model by carving or casting in a rubber mold, mix and cure investment, burn off the wax model, and fill a cast with molten metal using the gravity pour, vacuum, or centrifugal casting processes	Casting	Multiple-choice lesson exams
	Mold Making	Multiple-choice lesson exams
	Project 3: Stone-Set Pendant	Multiple-choice lesson exams
Comprehend business and sales models used in the jewelry industry, the pricing structure of keystoning, and methods of work distribution and work flow	Jewelry Retailing Home-Based Business	Multiple-choice lesson exams
	Jewelry Retailing Store-Based Business	Multiple-choice lesson exams

Identify the chemical composition and characteristics of some common gemstones and the factors that contribute to their market value	Colored Gemstones and Diamonds	Multiple-choice lesson exams
Demonstrate procedures for performing quality repairs on common items such as metal chains, quartz watches, and pearl necklaces, and the standards for pricing the work performed	Common Jewelry Store Repairs	Multiple-choice lesson exams
	Graded Project 2: Chain Resizing	Graded project
Build a sterling silver bezel-set ring by hand from raw materials	Project 4: Bezel-Set Onyx Ring	Multiple-choice lesson exams
Size, cut, and solder a 3-layer ring band, measure and place prong settings, and mount gemstones into the prongs	Stone Setting	Multiple-choice lesson exams
	Project 5: Three-Stone Prong-Set Band	Multiple-choice lesson exams
	Graded Project 3: Three-Stone Prong-Set Band	Graded project

PROGRAM STRUCTURE

Instruction Set 1

Lesson 1	**Starting Your Program**
Lesson 2	**The Bench Jeweler's Tools**

Instruction Set 2

Lesson 3	**History of Jewelry and a Summary of Metals**
Lesson 4	**Monogram Pendant**
Learning Aids	**Saw frame**
	Packet of saw blades
	Hardwood bench pin
	6-in. double-cut file
	High-speed twist drill bit
	Brass sheet
	Packet of jump rings
	Polishing cloth
	Gesswein catalog request form

Instruction Set 3

Lesson 5	**Soldering**
Lesson 6	**Ring Sizing**
Lesson 7	**Link Identification Bracelet**
Learning Aids	**Propane torch tip**
	Spark lighter
	Easy silver wire solder
	14-gauge round brass wire
	20-gauge brass sheet
	Safety goggles
	Unlined nitrile gloves (1 pair)
	Pickling compound (½ oz. packet)
	Cross-locking tweezers

Instruction Set 4

Lesson 8	**Casting**
Lesson 9	**Mold Making**
Lesson 10	**Stone-Set Pendant**
Learning Aids	**Round brass wire (3 pcs.)**
	Green carving wax
	Small cuttlebone
	Lead-free wire solder (1 oz.)
	Simulated garnet (packet of four)

Instruction Set 5

Lesson 11	**Jewelry Retailing: Home-Based Business**
Lesson 12	**Jewelry Retailing: Store-Based Business**
Lesson 13	**Monogram Earings**
Lesson 14	**Chain Resizing**
Learning Aids	**Brass sheet (1 in. × 3 in.)**
	Brass French ear wires (2 pairs)
	#2 saw blades (packet of 48)
	Wire solder and flux
	4.25-mm white-finished brass double cable chains (2)
	Padded mailing envelopes (2)

Instruction Set 6

Lesson 15	**Colored Gemstones and Diamonds**
Lesson 16	**Common Jewelry Store Repairs**
Lesson 17	**Bezel-Set Onyx Ring**
Learning Aids	**Steel ring mandrel**
	Oval black onyx (14 mm × 10mm)
	Sterling silver bezel wire
	26-gauge sterling silver sheet (½ in. × ¾ in.)
	20-gauge sterling silver sheet (¼ in. × 2¾ in.)
	Needle file
	Binding wire
	Easy paste solder
	Medium paste solder
	Round nose pliers
	Copper tongs
	Pickling compound (½ oz. packet)
	Color supplement—Gemstone Gallery
	Magnesia soldering block

Instruction Set 7

Lesson 18	**Stone Setting**
Lesson 19	**Jewelry Design**
Lesson 20	**Three-Stone Prong-Set Band**
Lesson 21	**Three-Stone Prong-Set Band**
Lesson 22	**Wedding Band Resizing**
Learning Aids	**Two-speed rotary tool**
	Bristle brush accessory for rotary tool
	9-in. gold-filled wire
	4-in. sterling silver wire
	Sterling silver settings (6)
	Round cubic zirconias (6)

4-mm sterling wedding bands (2, sizes 6 and 9)

Medium silver paste solder (1 syringe)

Easy silver paste solder (1 syringe)

Padded mailing envelopes (2)

Jewelry Design

Work Experience Option

LESSON DESCRIPTIONS AND OBJECTIVES

Starting Your Program

Succeed by learning how to use your Penn Foster program.

By the end of this lesson, you'll be able to:

- Understand how to use your Student Portal.
- Access the Penn Foster Community and use it to find answers.
- Connect with Penn Foster on various social media sites.

The Bench Jeweler's Tools

Explore the components of a bench jeweler's work area.

By the end of this lesson, you'll be able to:

- Demonstrate how to construct a portable work area.
- Explain the parts and purpose of a flexible shaft machine.
- Identify the types and sizes of sawblades, files, and drills.
- Demonstrate the proper procedures for sawing, filing, and drilling.
- Identify the various types of pliers and hammers and explain their uses.
- Demonstrate how bench jewelers use mandrels, anvils, vises, and magnifiers.

History of Jewelry and a Summary of Metals

Get an overview of the history and development of the art of jewelry through the ages.

By the end of this lesson, you'll be able to:

- Explain how metals are used in making coins, industrial items, and jewelry.
- Demonstrate techniques used to mix gold and silver with other metals to produce varying degrees of hardness and color.
- Understand the effects of heating and cooling on jewelry metals as you learn how to make metals harder or softer.
- Demonstrate the proper procedure for cleaning and finishing techniques, including filing, sanding, and polishing.

Project 1: Monogram Pendant

Create your first piece of jewelry! Practice your skills by training your mind and hands to work together for the basic operations of sawing, filing, drilling, and finishing.

Soldering

Learn how to use solder to create or repair jewelry.

By the end of this lesson, you'll be able to:

- Identify the different methods and types of fuels and torches that can be used to solder.
- Recognize neutral and oxidizing flame characteristics.
- Demonstrate how to repair bracelets, chains, and other jewelry items.

Ring Sizing

This lesson will teach you how to resize different types of rings.

By the end of this lesson, you'll be able to:

- Understand the different techniques and approaches to sizing rings.
- Identify the tasks and problems involved in ring sizing.
- Demonstrate how to size simple bands, rings containing stones, and special rings for people with arthritis.
- Understand how to properly use a mechanical ring sizer to size rings.

Project 2: Link Identification Bracelet

In this lesson, you'll create a chain-link bracelet!

By the end of this lesson, you'll be able to:

- Create and solder links.
- Fabricate jump rings and solder them to other bracelet parts.
- Sand and finish the completed bracelet.

Casting

In this lesson, you'll learn how to use liquid metal alloy to create jewelry pieces.

By the end of this lesson, you'll be able to:

- Create functional models out of wax.
- Properly invest items to be cast.
- Understand the vacuum and centrifugal casting processes.
- Recognize and correct casting defects.

Mold Making

Learn how to use molding to create unique pieces of jewelry.

By the end of this lesson, you'll be able to:

- Understand the purpose of molding, including its advantages and disadvantages.
- Properly create and pack a rubber mold.
- Inject the mold with wax to create a reproduction.
- Mold an object using liquid silicone.
- Explore the steps involved in electroplating.

Project 3: Stone-Set Pendant

Create a stone-set pendant.

By the end of this lesson, you'll be able to:

- Learn various wax modeling techniques.
- Carve a basic wax model for casting.

- Create a casting from metal.
- Set a gemstone in the finished pendant.

Jewelry Retailing: Home-Based Business

Get insider tips on how to develop your own home-based jewelry business.

By the end of this lesson, you'll be able to:

- Assess your personal and professional goals.
- Create a business plan based on those goals.
- Know how to register your business and obtain a sales tax license.
- Understand methods of marketing and selling your jewelry.
- Recognize how to set up your home office.

Jewelry Retailing: Store-Based Business

Get tips on personal selling and basic selling techniques.

By the end of this lesson, you'll be able to:

- Recognize the types of retailers and industry trends.
- Know how to identify a target market.
- Identify the characteristics of a retail jewelry business.
- Understand how store location, decor, layout, and displays can enhance a business's image and increase sales.
- Understand the basic functions of all retail operations.

Graded Project 1: Monogram Earrings

Craft earrings to match the pendant you made earlier in Project 1.

Graded Project 2: Chain Resizing

Resize two chains to form one necklace and one bracelet.

Colored Gemstones and Diamonds

In this lesson, you'll learn the characteristics of diamonds, rubies, sapphires, and other gemstones.

By the end of this lesson, you'll be able to:

- Identify, grade, and evaluate popular gemstones.
- Understand how diamonds are formed, mined, marketed, cut, and graded.

Common Jewelry Store Repairs

Learn the steps involved in making common repairs.

By the end of this lesson, you'll be able to:

- Understand how to receive jewelry for repair and document jewelry items.
- String pearls and beads.

- Identify the basic parts of a quartz watch.
- Change watch batteries.
- Repair eyeglass frames using the proper solders.

Project 4: Bezel-Set Onyx Ring

Make a bezel-set onyx ring.

By the end of this lesson, you'll be able to:

- Form a band from flat stock.
- Measure, form, and solder a bezel from bezel wire.
- Secure a stone in the bezel.

Stone Setting

In this lesson, you'll learn how to set stones.

By the end of this lesson, you'll be able to:

- Identify the tools and burns used for setting stones.
- Understand how a prong setting is made.
- Recognize the steps needed to make any kind of stone setting.
- Know the characteristics of an effective setting.

Jewelry Design

Explore the fascinating principles and elements of basic jewelry design.

By the end of this lesson, you'll be able to:

- Understand the parameters of jewelry design.
- Sketch your design ideas with paper and pencils.
- Recognize the aspects of three-dimensional objects.
- Know the types of settings and stones.

Graded Project 3: Three-Stone Prong-Set Band

Construct a three-stone prong-set band. Craft a ring band from any type of sterling silver or gold-filled or plumb gold stock. Then, attach three gemstones to the band using several four-prong settings.

Graded Project 4: Wedding Band Resizing

Resize two sterling silver bands—one is size 5 and one is size 7—to size 6.

Note: The titles of your learning materials may be different from those listed on your program outline. There is no need to call your instructor about these differences. While the titles of certain learning materials may differ, the educational content is the same. All learning materials are designed to give you the finest education in your field. If you need instructional assistance, however, be sure to call for help. We reserve the right to revise the program of study and the instructional materials and to substitute for the items of equipment offered.